KENYA METHODIST UNIVERSITY

END OF 2ND TRIMESTER 2010 EXAMINATIONS

FACULTY	**:**	**SCIENCE AND TECHNOLOGY**
DEPARTMENT	**:**	**COMPUTER SCIENCE & BUSINESS INFORMATION**
UNIT CODE	**:**	**CISY 437**
UNIT TITLE	**:**	**NETWORK PERFORMANCE AND OPTIMIZATION**
TIME	**:**	**2 HOURS**

INSTRUCTIONS:
Answer Question ONE and ANY other TWO questions.

Question One

(a) Explain the meaning of the following terms as used in ATM virtual connection
   i. Transmission Path
   ii. Virtual Paths (VPs):
   iii. Virtual Circuits (VCs): (3 marks)

(ii) Differentiate the two types of Interfaces that interconnect ATM devices over point to point links (4 marks)

(b) Computer networks can be categorized by different methods but they have common factors that unite all networks. Mention any five of these factors (5 marks)

(c) Briefly describe how the following transmission takes place

(i) Digital transmission over analog networks (4 marks)

(ii) Analog transmission over digital networks (4 marks)

(d) Define the following metrics as used to measure network performance (10 marks)

i. latency
ii. jitter
iii. packet loss
iv. throughput
v. Bandwidth

Question Two

(a) Name and discuss the two types of WAN virtual circuits (4 marks)

(b) Explain the functions of the following layers of the ATM reference model
   i). ATM layer
   ii). Physical layer
   iii). ATM Adaptation layer (6 marks)

(c) Briefly describe the ATM cell format by explaining the functions of the various fields. (10 marks)

Question Three

(a) (i) Discuss three types of measurement which can be made in order to assess network performance (6 marks)

(ii) Define the term *network monitoring* (2 marks)

(b) Name and explain the four types of Quality of Service (QoS) services offered by ATM (8 marks)

(c) Differentiate between permanent virtual circuits (PVC) and switched virtual circuits (SVC) (4 marks)

Question Four

(a) Explain the functions of the following planes of ATM reference model (8 marks)

(i) control

(ii) user

(iii) layer management

(iv) plane management

(b) State any three tools available for measuring network performance (6 marks)

(c) Define network management (2 marks)

(d) (i) What is Network QoS? (2 marks)

(ii) List the four traffic handling mechanisms in a network (2 marks)

Question Five

(a) Name and explain three switching technologies (6 marks)

(b) List any five applications requiring Quality of Service (QoS) (5 marks)

(c) Mention and explain any three network management basic tasks (6 marks)

(d) What are the advantages of digital transmission over analog transmission (3 marks)